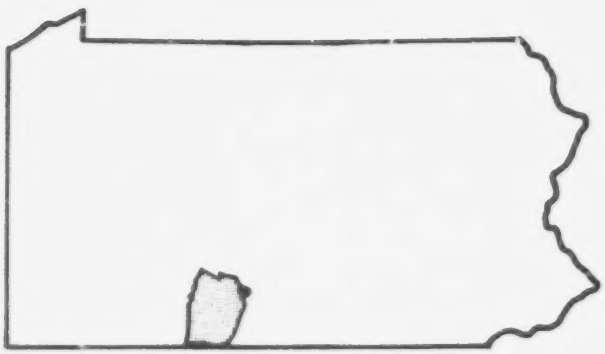
FLOOD INSURANCE STUDY

TOWNSHIP OF BROAD TOP, PENNSYLVANIA
BEDFORD COUNTY



JUNE 4, 1990

Federal Emergency Management Agency

COMMUNITY NUMBER · 421333

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Flood Insurance Study Effective Date: June 4, 1990

Flood Insurance Study Revised:

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FLOOD INSURANCE STUDY
TOWNSHIP OF BROAD TOP, BEDFORD COUNTY, PENNSYLVANIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Township of Broad Top, Bedford County, Pennsylvania, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the U. S. Geological Survey (USGS) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, Project Order No. 8. This work was completed in December 1986.

1.3 Coordination

On December 11, 1984, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives from FEMA, the township, and the USGS (the study contractor) to determine the streams to be studied by detailed methods.

On May 17, 1989, a final CCO meeting was held with representatives of FEMA, the township, and the study contractor to review the results of the study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Broad Top, Bedford County, Pennsylvania. The Boroughs of Hopewell and Coaldale are located within the township but are not included in this study. The area of study is shown on the Vicinity Map (Figure 1).

The following streams were studied by detailed methods: the Raystown Branch Juniata River, from a point approximately 0.46 mile downstream of Township Route 529 to a point approximately 570 feet upstream of the confluence of Sandy Run, and from a point approximately 0.4 mile downstream of Legislative Route 05056 to a point approximately 4.6 miles upstream; Sandy Run, from a point approximately 1.0 mile upstream of its confluence with the Raystown Branch Juniata River to a point approximately 200 feet upstream of Township Route 550; Longs Run, from its confluence with Sandy Run to a point approximately 125 feet upstream of Township Route 553; and Sixmile Run, from a point approximately 1.1 mile upstream of its confluence with the Raystown Branch Juniata River to a point approximately 1,200 feet upstream of Township Route 573. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through December 1991.

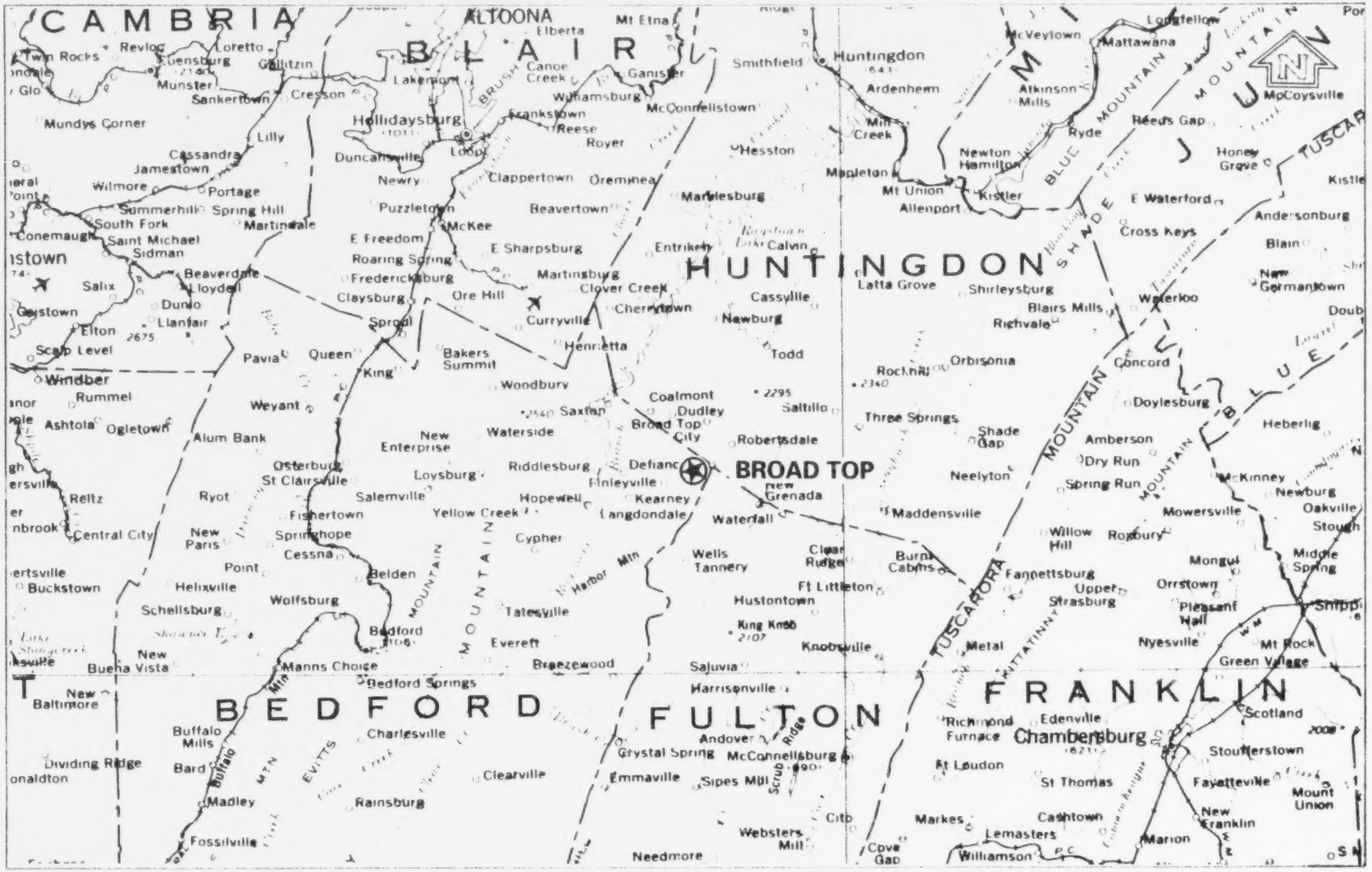
Sherman Valley Run and the remaining portions of the Raystown Branch Juniata River, Sandy Run, and Sixmile Run were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Township of Broad Top.

2.2 Community Description

The Township of Broad Top is located in the northern portion of Bedford County in south-central Pennsylvania, approximately 15 miles northeast of the Township of Bedford. It is bordered by the Township of Wells to the southeast, the Township of East Providence to the south, the Township of West Providence to the southwest, the Township of Hopewell to the west, the Township of Liberty to the northwest, the Township of Carbon to the north, and the Township of Wood to the northeast.

2.3 Principal Flood Problems

Major floods cause localized inundation of structures along the Raystown Branch Juniata River, Sandy Run, Longs Run, and Sixmile Run.


CAMBRIA
ALTOONA
BLAIR
HUNTINGDON
BROAD TOP
BEDFORD
FULTON
FRANKLIN
Chambersburg
Huntingdon
Hollidaysburg
Martinsburg
Bedford
Everett
McConnellsburg
Mercersburg
Waynesboro
Scotland
Fayetteville
Mount Union
Shade Gap
Three Springs
Orbisonia
Rockhill
Broad Top City
Coalmont
Dudley
Saxton
Robertsdale
Saltillo
Woodbury
Riddlesburg
Defiance
Hopewell
Kearney
Langdondale
Waterfall
Maddensville
Mowersville
Neelyton
Dry Run
Spring Run
Fannettsburg
Upper Strasburg
Orrstown
Pleasant Hall
Shippensburg
Mont Rock
Green Village
Nyesville
Metal
Knobsville
Saluvia
Harrisonville
Hustontown
Ft Littleton
Burnt Cabins
Clear Ridge
Wells Tannery
Yellow Creek
Cypher
Tatesville
Everett
Breezewood
Bedford Springs
Manns Choice
Buena Vista
New Baltimore
Schellsburg
Wolfsburg
Helixville
Buckstown
Central City
Reitz
Ryot
Osterburg
St Clairsville
Loysburg
Salemville
Fishertown
New Paris
Springhope
Cessna
Belden
Point
Alum Bank
New Enterprise
Waterside
Saxton
Coalmont
Dudley
Broad Top City
Robertsdale
Saltillo
Woodbury
Riddlesburg
Defiance
Finleyville

2.4 Flood Protection Measures

No flood control structures have been installed in the township.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. A flood event of a magnitude which is expected to be equaled or exceeded once on the average during any 100-year period (recurrence interval) has been selected as having special significance for floodplain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a 1 percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

The flood-frequency discharge values for the Raystown Branch Juniata River, Sandy Run, Longs Run, and Sixmile Run were determined utilizing regional regression equations developed in USGS Water-Resources Investigations 82-21 (Reference 1). The Pennsylvania State University PSU-IV method confirmed the determinations for Sandy and Longs Runs (Reference 2). This technique was developed for specific use in estimating peak flood flows for ungaged sites on small streams in Pennsylvania.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGE (cfs) 100-YEAR
RAYSTOWN BRANCH JUNIATA RIVER		
At Riddlesburg	727	57,400
Above confluence of Yellow Creek	630	51,440
At Cypher Station	614	50,400
Above confluence of Pipers Run	606	49,800
Above confluence of Sherman Valley Run	598	49,300
SANDY RUN		
Below confluence of Longs Run	9.97	2,400
Above confluence of Longs Run	5.63	1,390
LONGS RUN		
At confluence with Sandy Run	4.34	1,070
SIXMILE RUN		
Approximately 1.06 mile upstream of confluence with Raystown Branch Juniata River	13.2	3,750
Above confluence of Brewster Hollow Run	10.3	2,475

Cross sections were field surveyed and located at close intervals above and below bridges and culverts in order to compute the significant backwater effects of these structures. All bridges and culverts in the community were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map (Exhibit 2) where applicable.

For the Raystown Branch Juniata River, from station 22,366 feet to station 26,500 feet and from station 45,770 feet to station 51,530 feet; and for Sixmile Run, water-surface elevations of floods of the selected recurrence interval were computed using the USGS WSPRO step-backwater computer program (References 3 and 4). Normal depths were applied to streambed elevations to obtain starting water-surface elevations. For Sandy Run, Longs Run, and the remaining portions of the Raystown Branch Juniata River, normal depths of flooding for the 100-year recurrence interval were estimated from the regional relationship between drainage area and flood depth prepared by the USGS (Reference 5). This relationship was developed by means of regional regression analyses of basin areas and 100-year within-channel depths observed at stream gages. Depths were adjusted on the basis of hydraulic calculations to account for increased depth due to backwater from hydraulic structures, such as bridges and culverts (References 3, 4, and 6).

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of engineering judgement and field inspection of the floodplain areas. The channel "n" values for the Rayscown Branch Juniata River ranged from 0.033 to 0.039, and the overbank "n" values ranged from 0.042 to 0.075. For Sixmile Run, the channel "n" values ranged from 0.037 to 0.062, and the overbank "n" values ranged from 0.048 to 0.100.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100-year floodplain boundaries to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. For the streams studied in detail, the 100-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 20 feet (Reference 7).

For the streams studied by approximate methods, the 100-year floodplain boundaries were delineated using the Flood Hazard Boundary Map for the Township of Broad Top (Reference 8).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

No floodways were calculated as part of this study.

5.0 INSURANCE APPLICATIONS

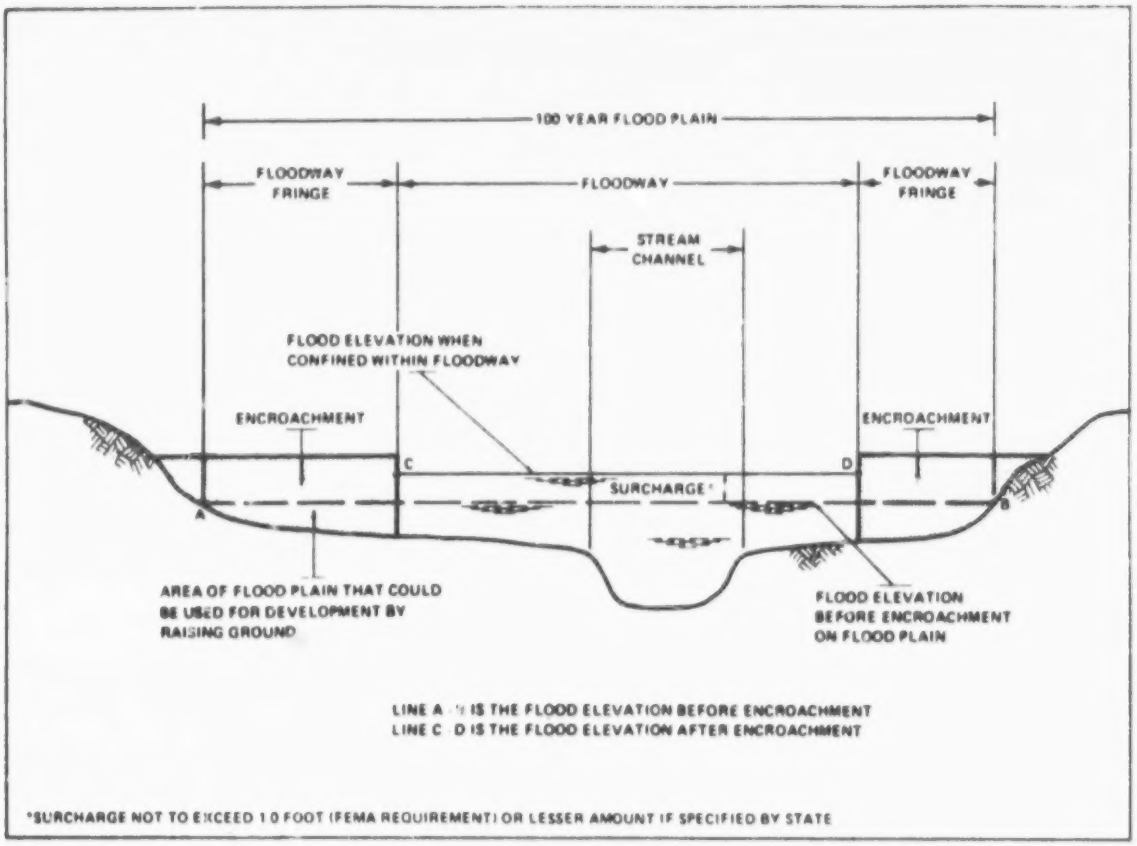
For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FLOODWAY SCHEMATIC Figure 2

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100-year floodplain. The locations of selected cross sections used in the hydraulic analyses are shown where applicable.

7.0 OTHER STUDIES

Flood Insurance Studies have been prepared for the Townships of Liberty, Hopewell, East Providence, West Providence, and Carbon; and the Boroughs of Coaldale and Hopewell (References 9, 10, 11, 12, 13, 14, and 15). The results of this study are in complete agreement with the results of those studies.

Due to its more detailed nature, this study supersedes the Flood Hazard Boundary Map for the Township of Broad Top (Reference 8).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technological Hazards Division, Liberty Square Building (Second Floor), 105 South Seventh Street, Philadelphia, Pennsylvania 19106.

9.0 BIBLIOGRAPHY AND REFERENCES

1. U. S. Department of the Interior, Geological Survey, Water-Resources Investigations 82-21, Evaluation of the Streamflow-Data Program in Pennsylvania by H. N. Flippo, Jr., Harrisburg, Pennsylvania, 1982.

2. The Pennsylvania State University Institute for Research on Land and Water Resources, Report FHWA/PA 81-013, Procedure PSU-IV for Estimating Design Peaks on Ungaged Pennsylvania Watersheds by G. Aron and D. F. Kibler, University Park, Pennsylvania, 1981.

3. U. S. Federal Highway Administration, Report FHWA/RD-86/108, Bridge Waterways Analysis Model/Research Report by J. O. Shearman, W. H. Kirby, and V. R. Schneider, Springfield, Virginia, 1985.

4. National Technical Information Service, Bridge Waterways Analysis Model/User's Instructions by J. O. Shearman, W. H. Kirby, and V. R. Schneider, Springfield, Virginia, 1985.

5. U. S. Department of the Interior, Geological Survey, Water-Resources Investigations 86-4195, Technique for Estimating Depths of 100-year Floods in Pennsylvania by H. N. Flippo, Jr., Harrisburg, Pennsylvania, 1986.

6. U. S. Department of the Interior, Geological Survey, Techniques of Water-Resources Investigations, Measurement of Peak Discharge at Culverts by Indirect Methods by G. L. Bodhaine, Washington, D. C., 1968.

7. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 Feet: Everett East, Pennsylvania, 1968, Photorevised 1973; Hopewell, Pennsylvania, 1968, Photorevised 1973; Saxton, Pennsylvania, 1968, Photorevised 1981.

8. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Township of Broad Top, Bedford County, Pennsylvania, October 3, 1980.

9. Federal Emergency Management Agency, Flood Insurance Study, Township of Liberty, Bedford County, Pennsylvania, May 17, 1989.

10. Federal Emergency Management Agency, Flood Insurance Study, Township of Hopewell, Bedford County, Pennsylvania, September 6, 1989.

11. Federal Emergency Management Agency, Flood Insurance Study, Township of East Providence, Bedford County, Pennsylvania, June 19, 1989.

12. Federal Emergency Management Agency, Flood Insurance Study, Township of West Providence, Bedford County, Pennsylvania, July 4, 1989.

13. Federal Emergency Management Agency, Flood Insurance Study, Township of Carbon, Huntingdon County, Pennsylvania, June 19, 1989.

14. Federal Emergency Management Agency, Flood Insurance Study, Borough of Coaldale, Bedford County, Pennsylvania, April 16, 1990.

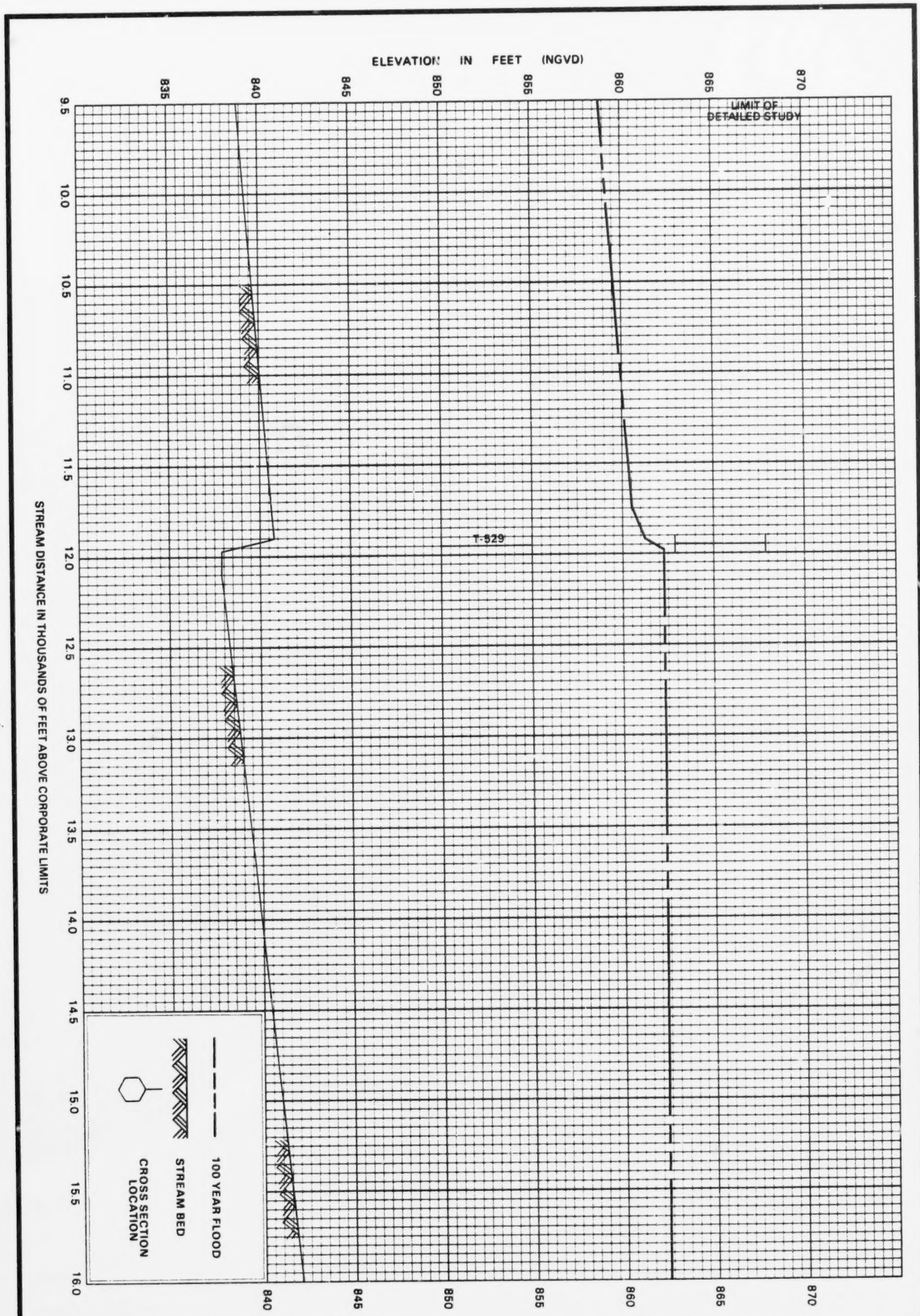
15. Federal Emergency Management Agency, Flood Insurance Study, Borough of Hopewell, Bedford County, Pennsylvania, September 15, 1989.

EXHIBIT 3 - ELEVATION REFERENCE MARKS

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 1	03	868.82	Chiseled square on southwest corner of corner of Township bridge T-529 over the Raystown Branch Juniata River.
RM 2	03	957.36	Railroad spike set in side of UTCO utility pole No. 84 near intersection of Township Roads T-529 and T-586.
RM 3	03	1,028.34	PDH disk on southwest corner of Township bridge T-550 over Sixmile Run.
RM 4	15	870.15	Mine spike in side of utility pole at bend in Stab Road, approximately 0.5 mile northeast of Borough of Hopewell.
RM 5	15	902.50	USC&GS disk set vertically in west wall at southwest corner of Independent Order of Odd Fellows building in Borough of Hopewell.
RM 6	15	926.49	USC&GS disk on northwest wing wall of north abutment of abandoned railroad bridge over the Raystown Branch Juniata River at Cypher Station.
RM 7	15	900.75	PDH disk on northwest wing wall of LR05056 bridge over Sherman Valley Run.
RM 8	15	1,018.51	Chiseled square on southwest end of concrete endwall of T-704 bridge over Sandy Run, approximately 1.3 miles south on State Highway 915 from post office at Borough of Hopewell.
RM 9	15	1,100.42	Chiseled square on northwest wing wall of bridge on Township Road T-553 over Longs Run.
RM 10	25	907.87	Railroad spike set in pole at west end of Township Road T-680.

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 11	25	907.48	Chiseled square on top stone masonry wing wall of culvert on private road, off Hopewell Township Road T-505, over unnamed tributary to the Raystown Branch Juniata River.
RM 12	25	919.88	Chiseled square on end of concrete curb at corner of concrete porch at intersection of private road and Township Road T-500.



FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER

01P

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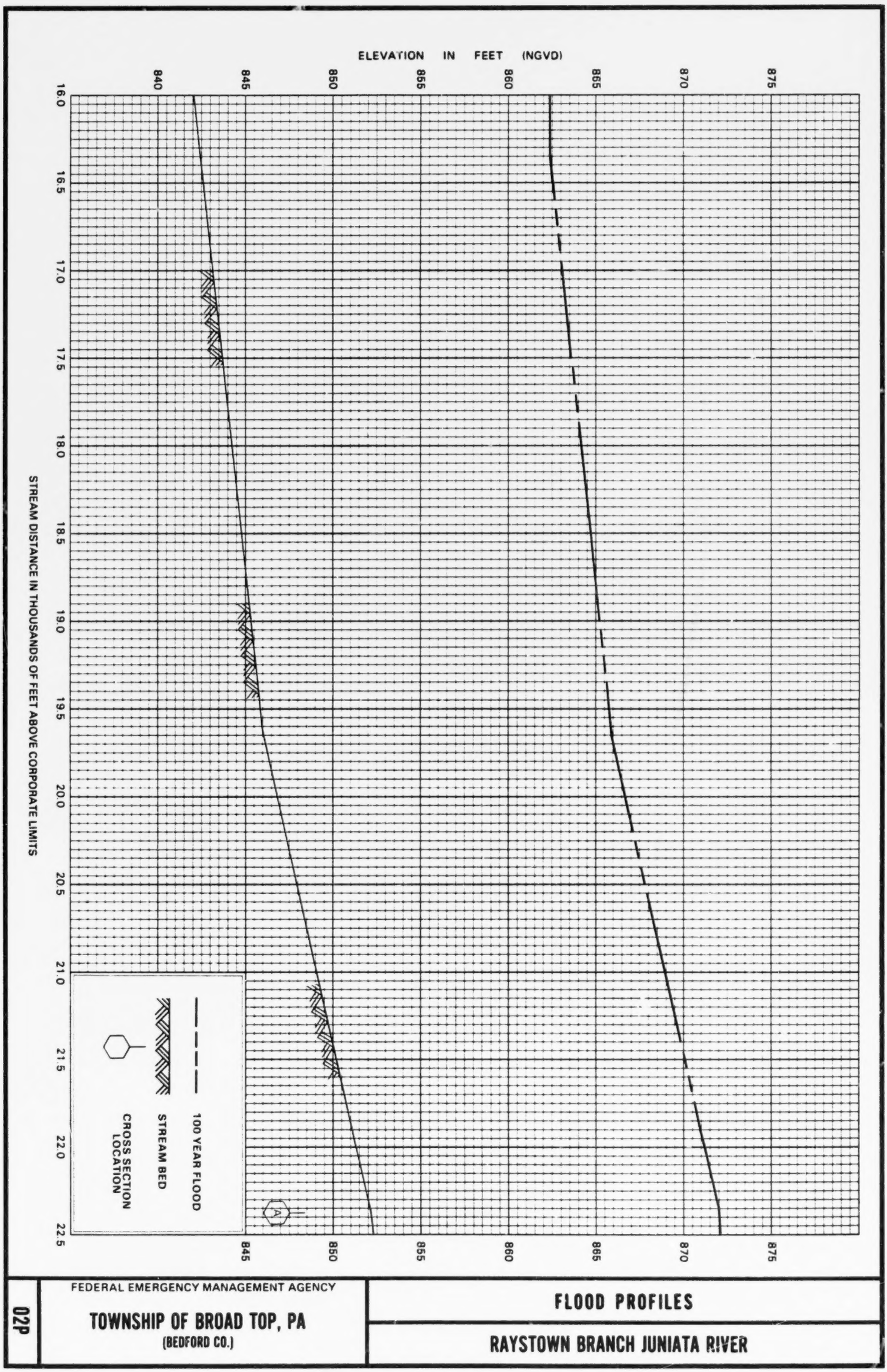


02P

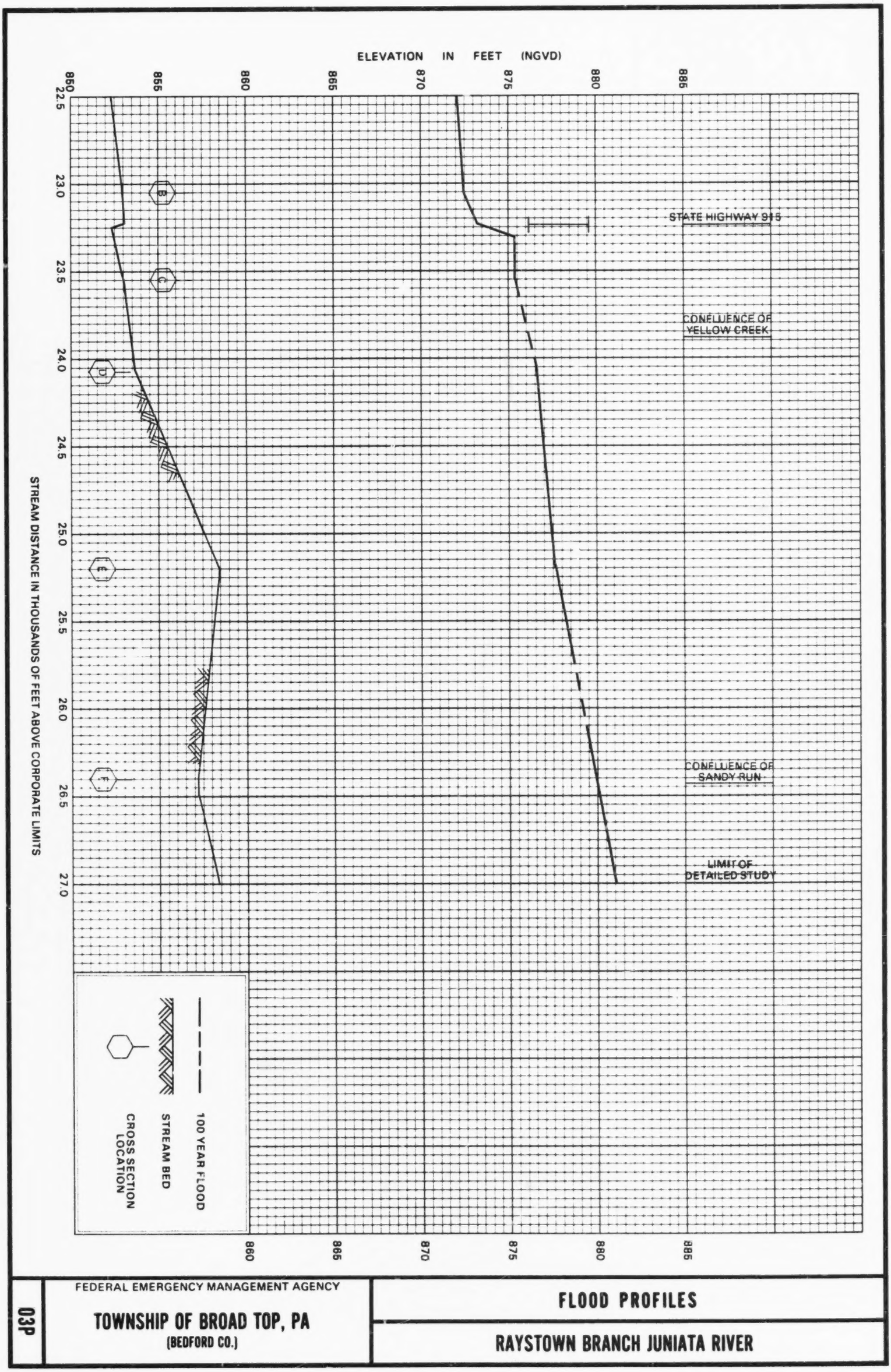
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA

(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER



03P

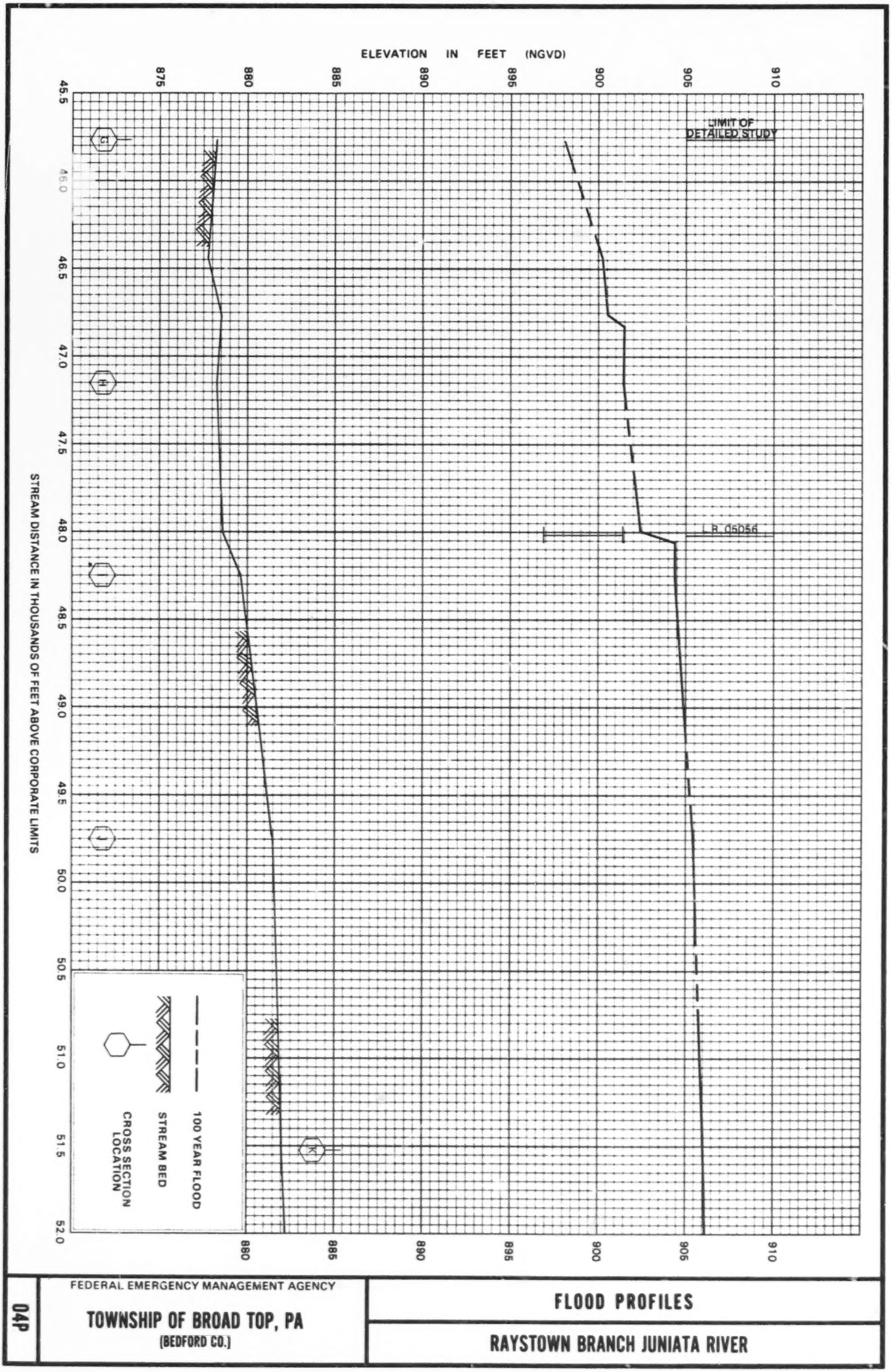
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA

(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER



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FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA

(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER

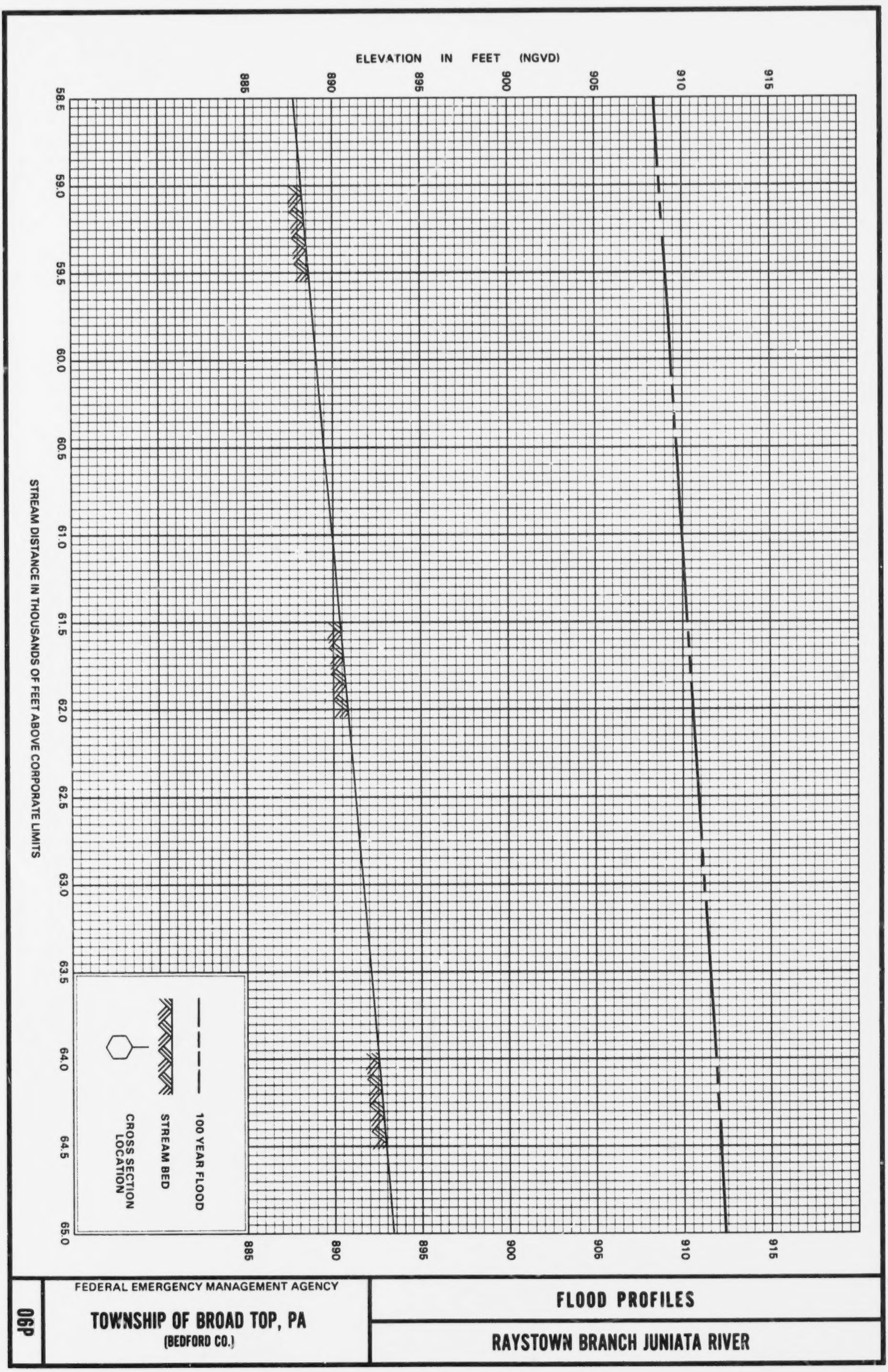
FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

05P



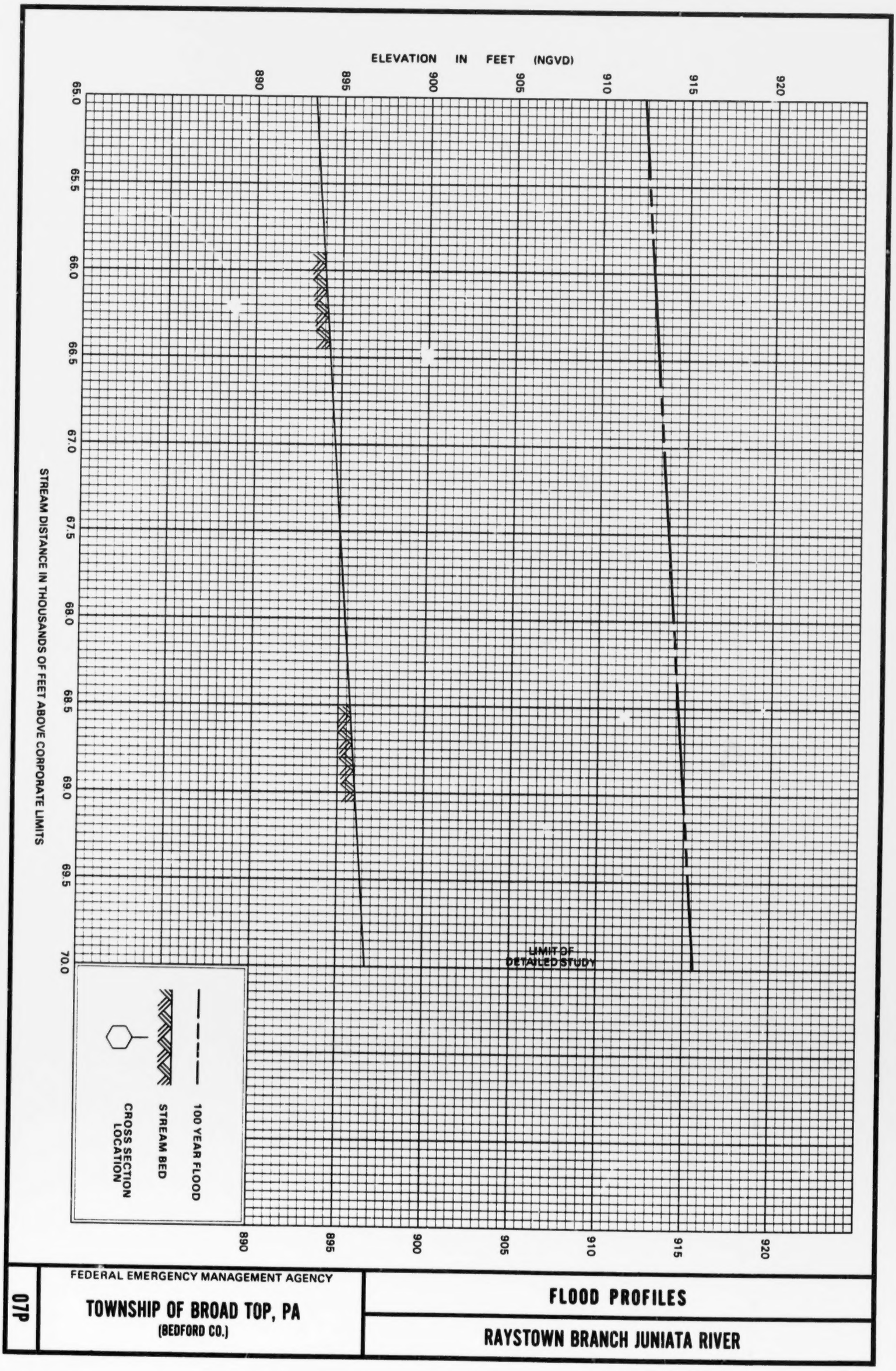
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER

06P



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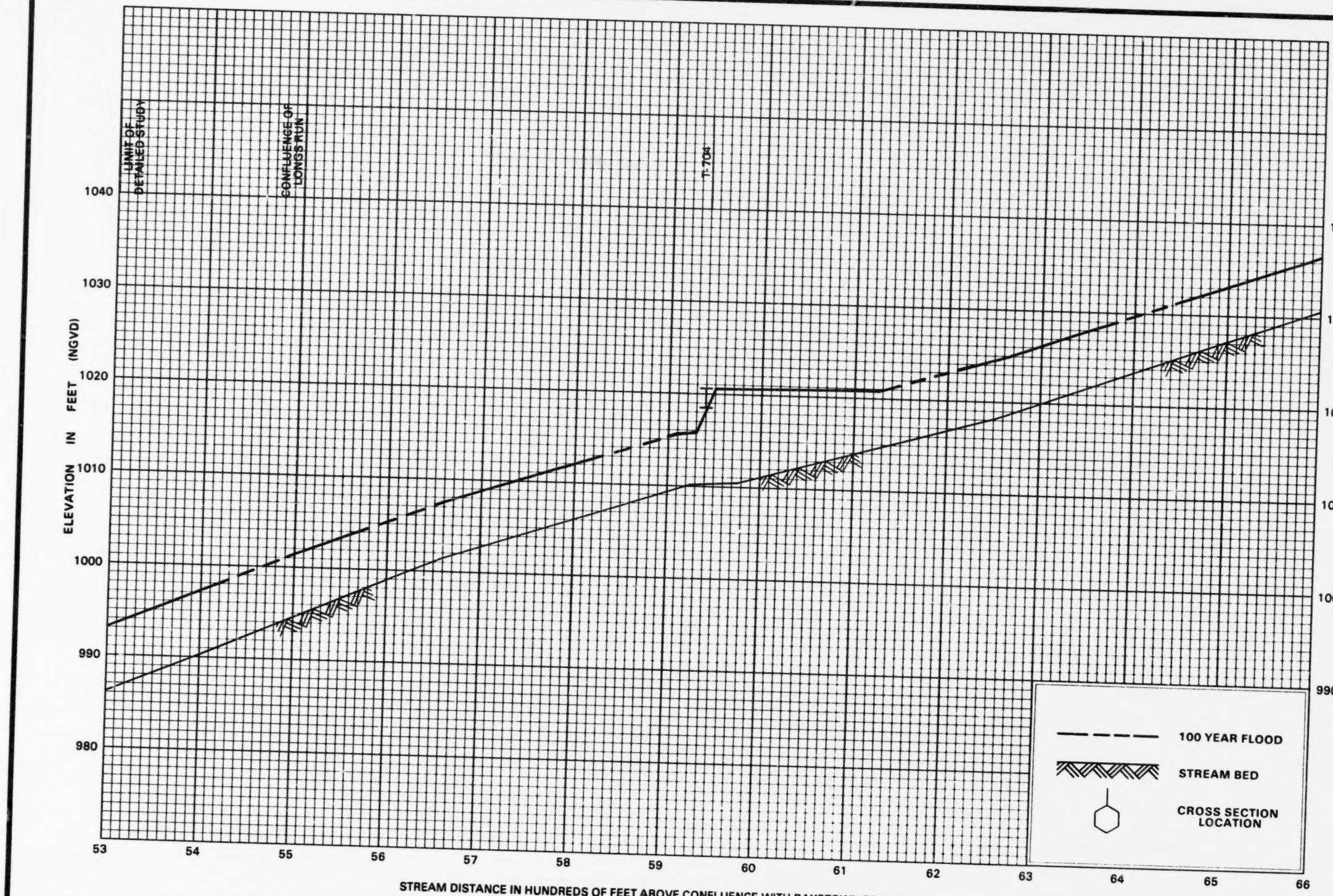
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

FLOOD PROFILES

RAYSTOWN BRANCH JUNIATA RIVER



FLOOD PROFILES

SANDY RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA

(BEDFORD CO.)

08P

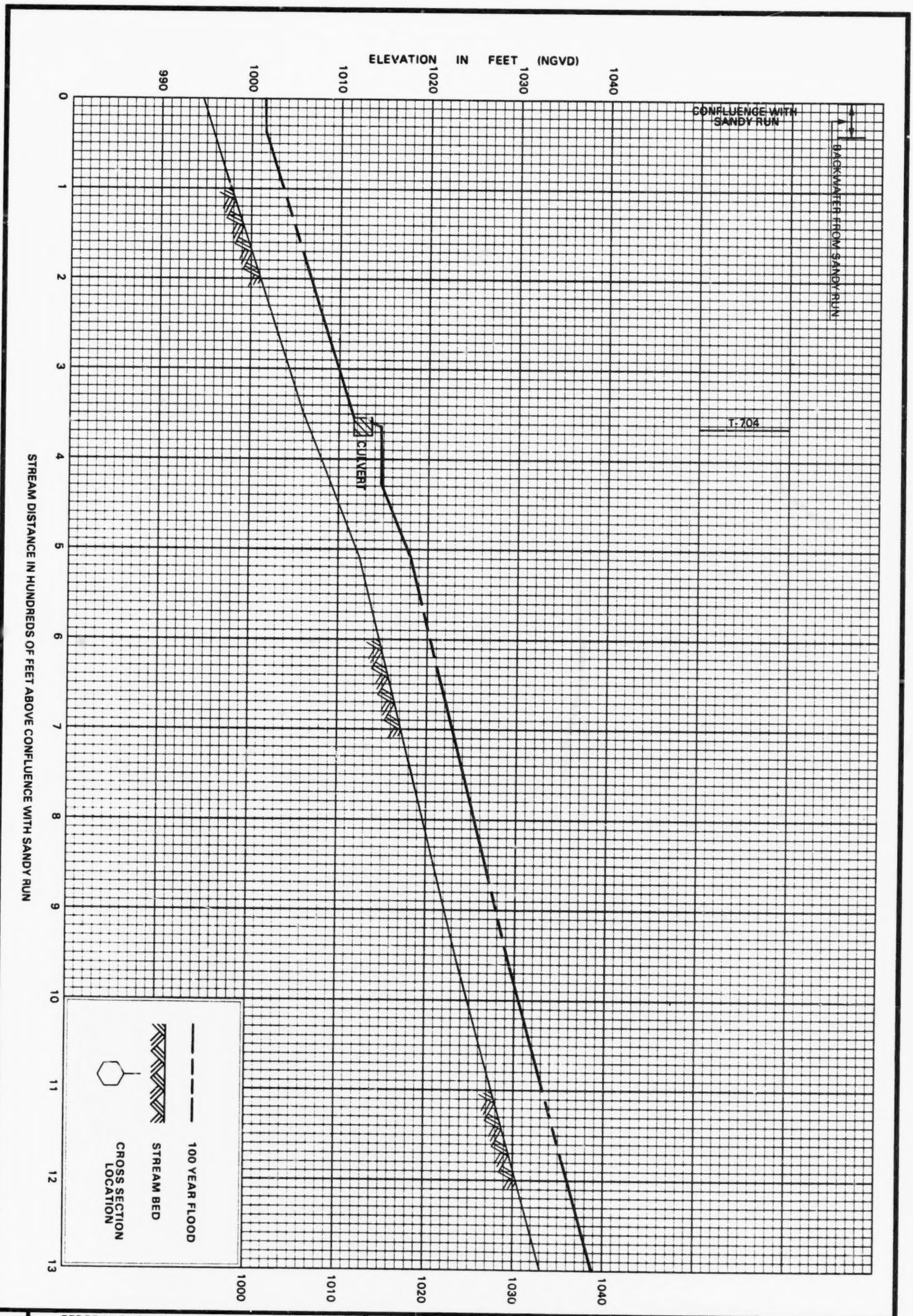
FLOOD PROFILES

SANDY RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

09P



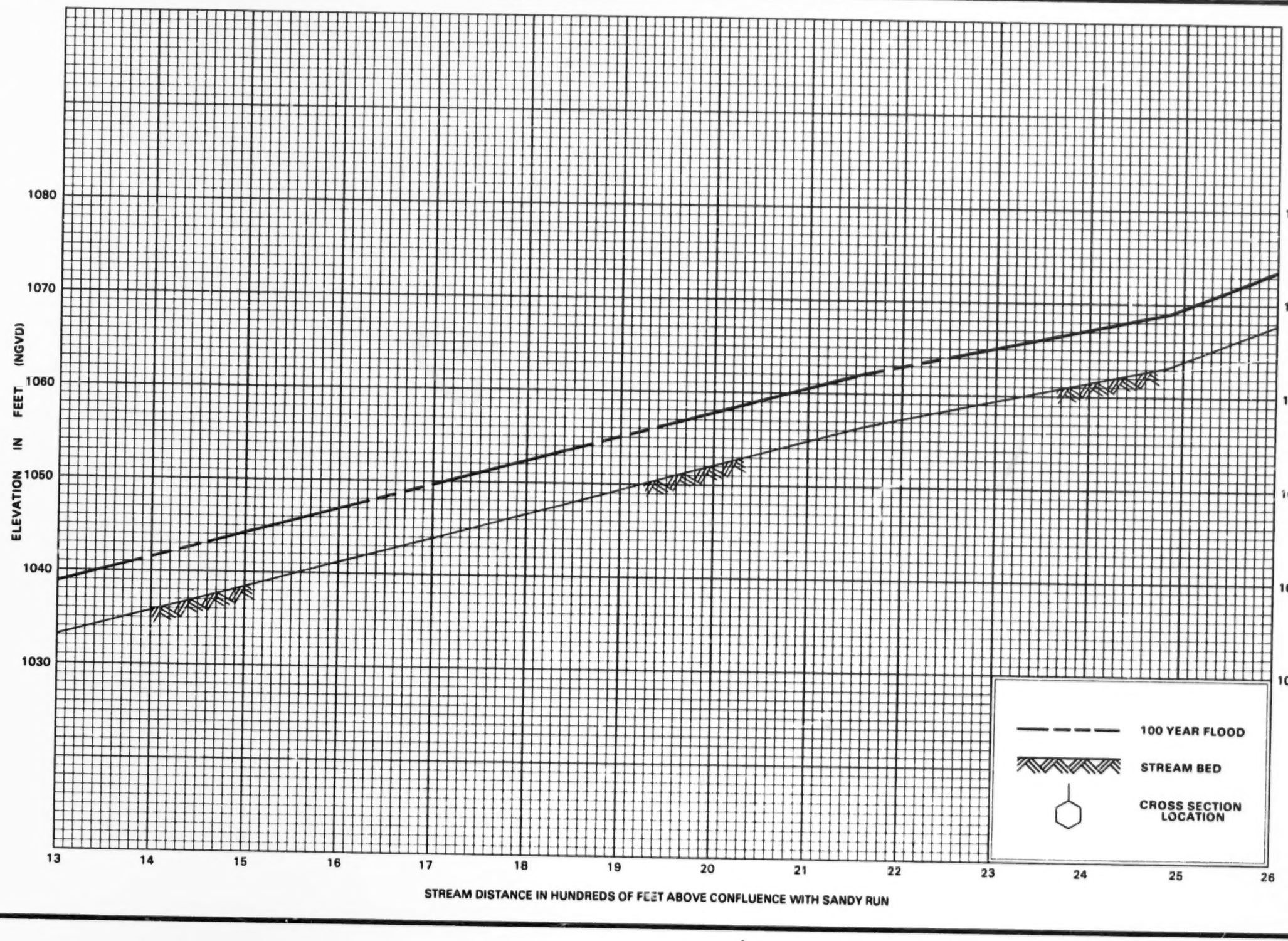
10P

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

FLOOD PROFILES

LONGS RUN



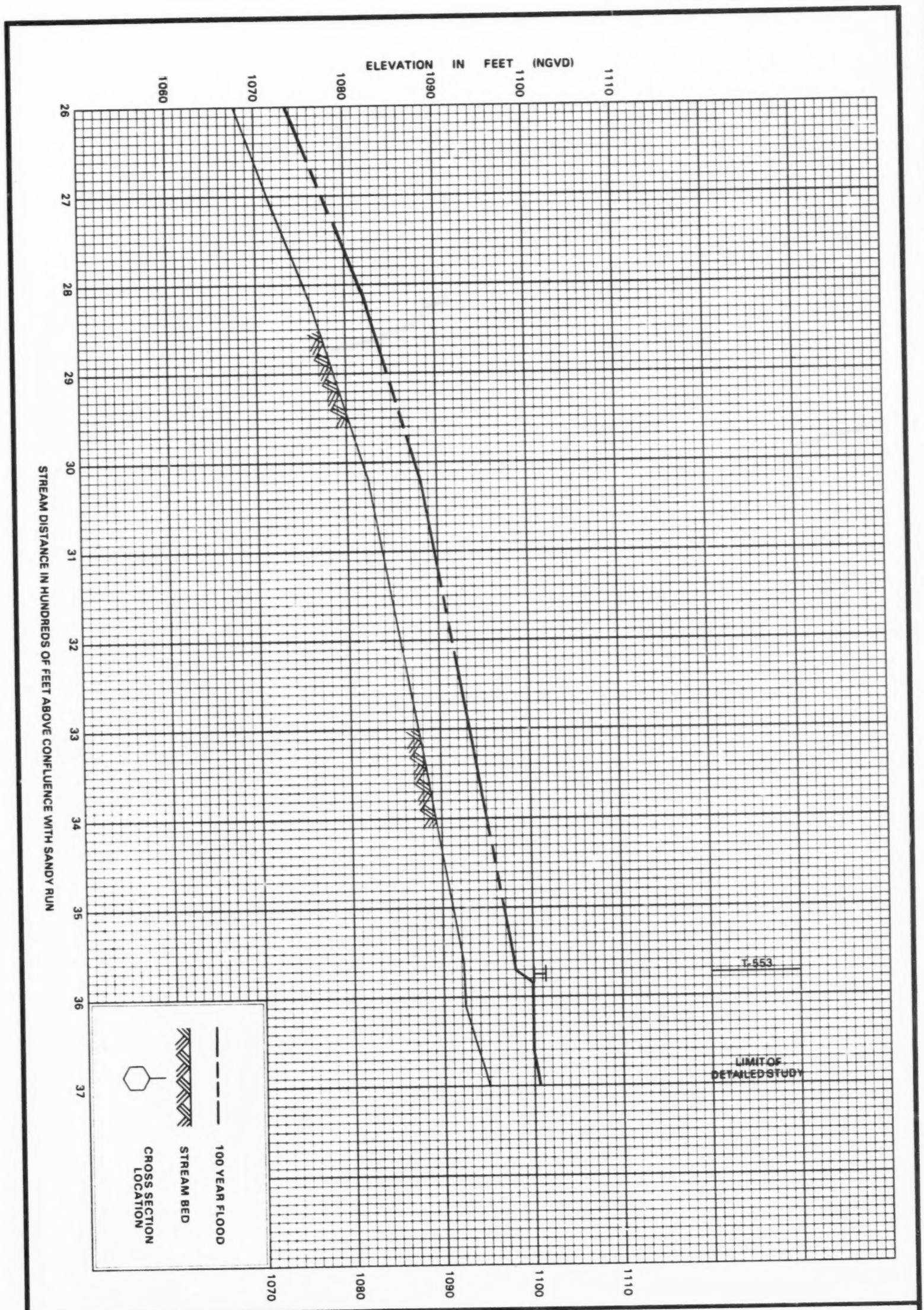
FLOOD PROFILES

LONGS RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

11P



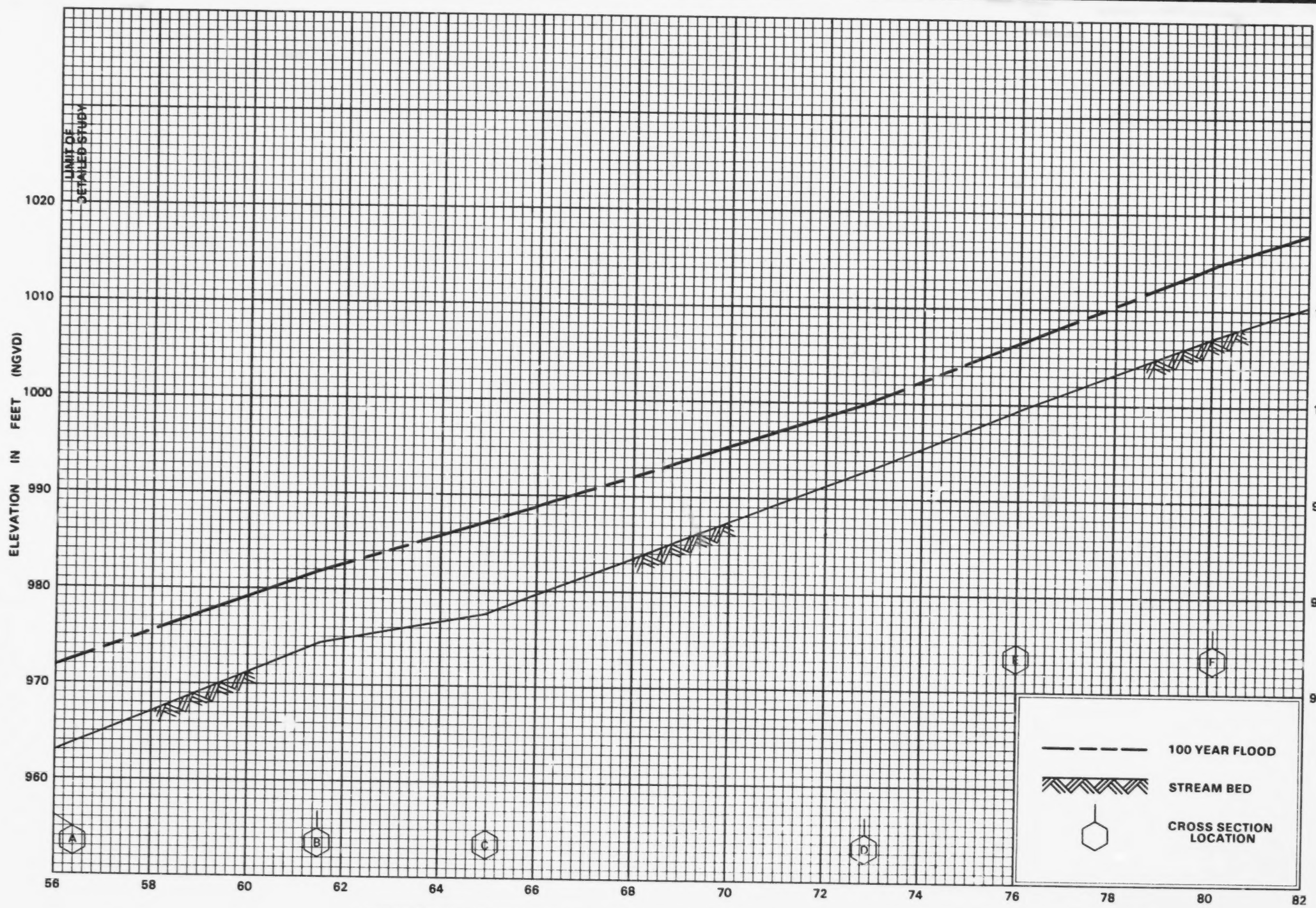
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

FLOOD PROFILES

LONGS RUN

12P



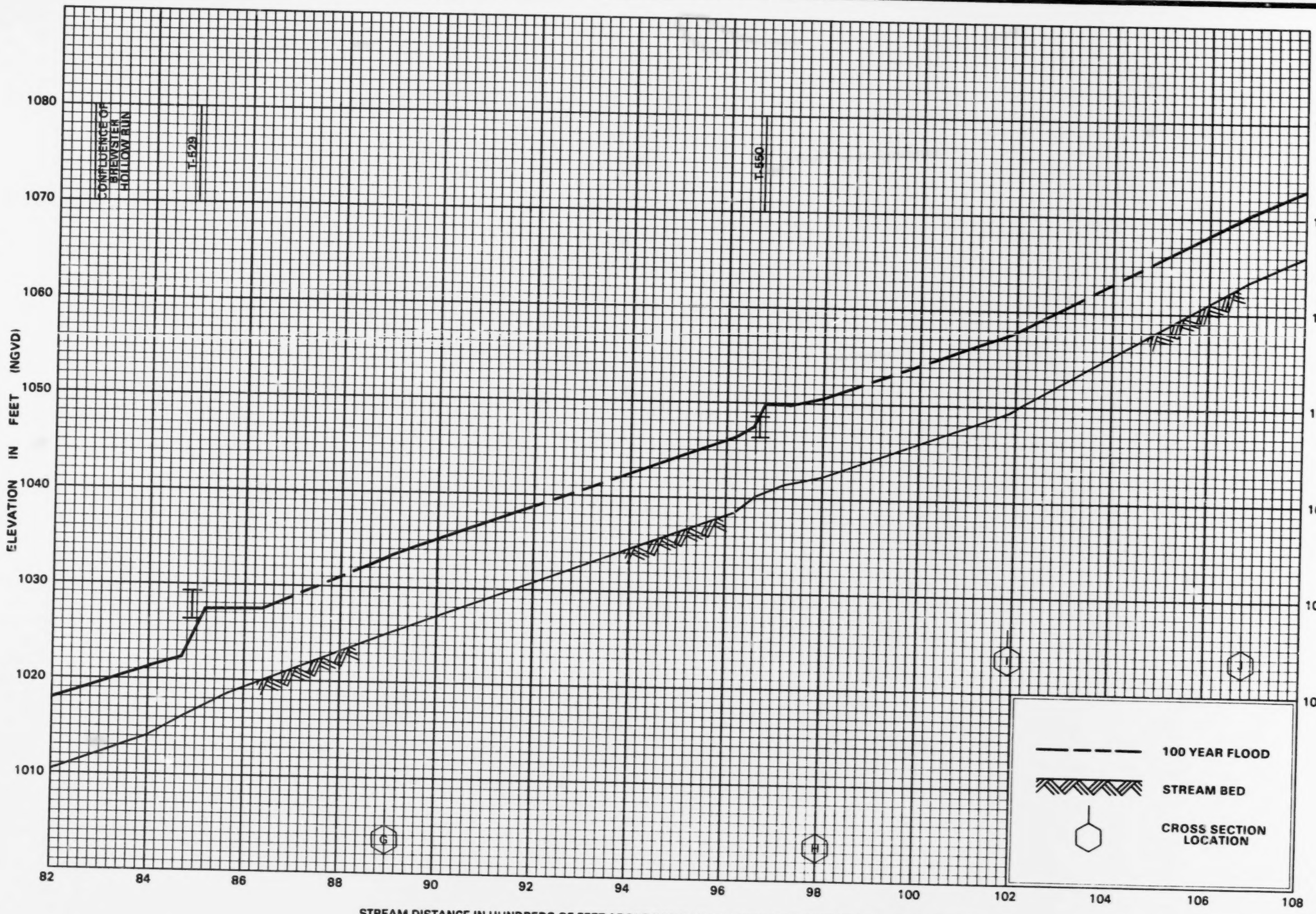
FLOOD PROFILES

SIXMILE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

13P



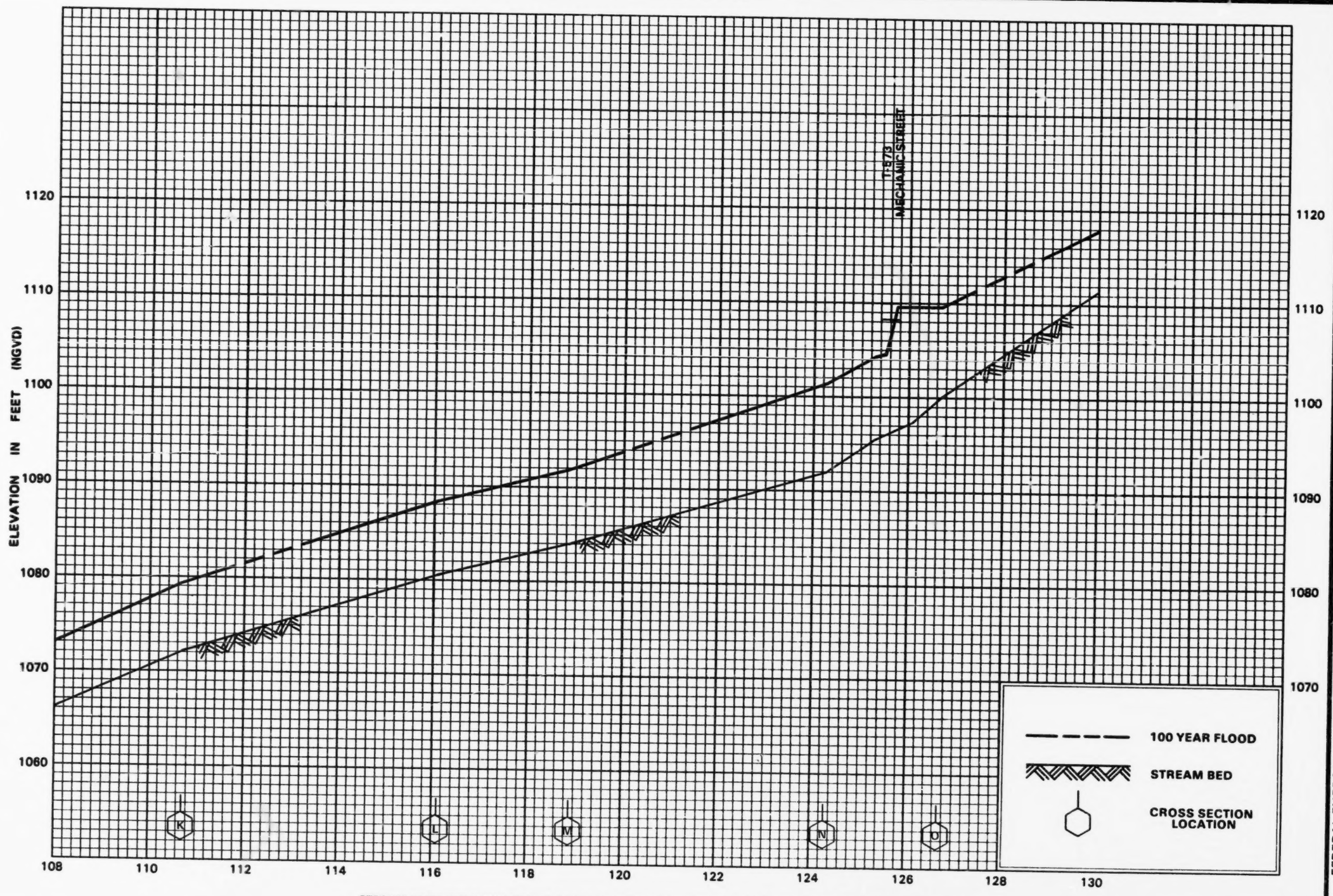
FLOOD PROFILES

SIXMILE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

14P



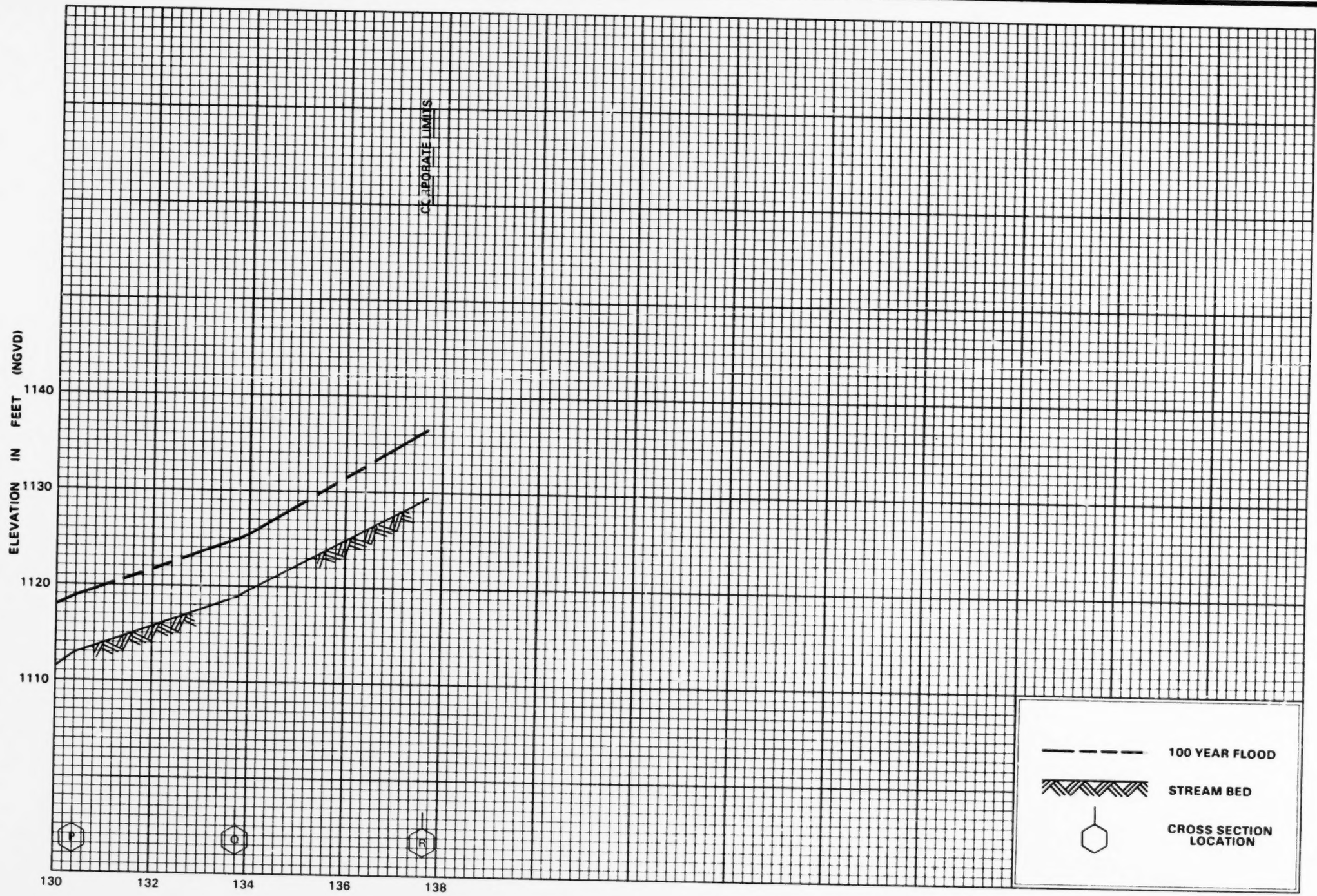
FLOOD PROFILES

SIXMILE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

15P



FLOOD PROFILES

SIXMILE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF BROAD TOP, PA
(BEDFORD CO.)

16P